

# Supply Chain Data Exchange for Material Disclosure

*Solving One of the Most Difficult RoHS-Related  
Problems for Small-to-Medium Sized Enterprises*

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*Presentation to NIST*

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# GoodBye Chain Group

- Specialists in RoHS and WEEE compliance
- Developers of compliance process solutions utilizing services, software tools and training
- Target customer: Small-to-Medium Sized Enterprise
- “Compliance Alliance”: mutual referral network to provide specialized skills to SMEs

# Restrictions on the Use of Hazardous Substances (RoHS)

- Highly complex
- Aggressive deadlines:
  - EU: July 1, 2006
  - China: Expected July 1, 2006
  - CA: January 1, 2007
- Requirement: products do not exceed Maximum Concentration Values for six substances:
  - 100 ppm for cadmium
  - 1000 ppm for lead, mercury, hexavalent chromium, PBBs and PBDEs
- Extremely risky for SMEs

Why?

# Brand-Ownning Companies Have Legal Liability and Risk Unprecedented Financial Loss...

Landmark event:

- October, 2001: Sony shipment of 1.3M units halted by Netherlands because of excess cadmium
- “Sony Corporation estimates an impact on sales of approximately **EUR 110 million** and on operating profit of approximately **EUR 52 million**, including costs of rework”

*(Press release, 2.18.02)*



# ...Tremendous Vulnerability...

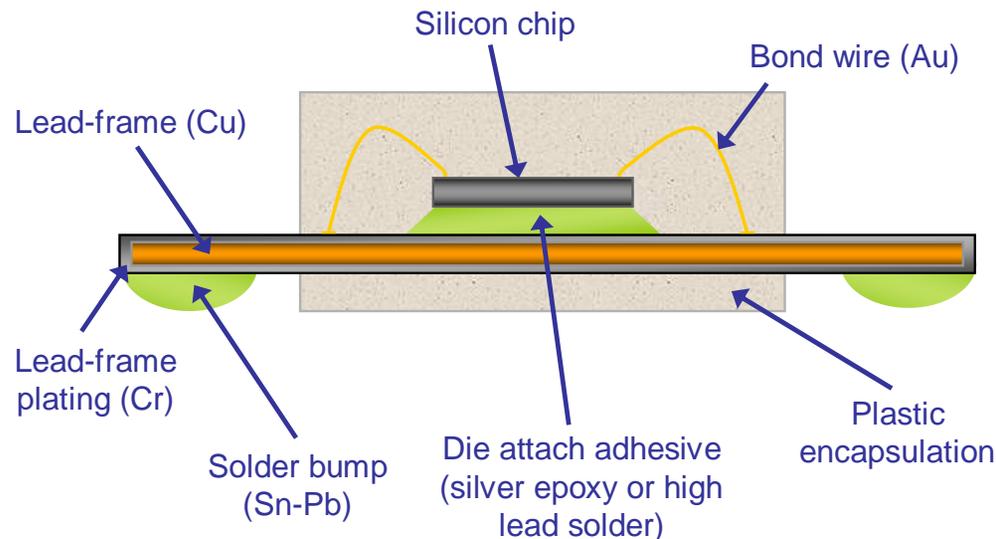
Sony didn't put the cadmium in the cable.

1/4200<sup>th</sup> of its supply chain did.

# ...and Unprecedented Requirements that Make it Easier than Ever to Be **Non-Compliant**

Compliance is based on substance as a percentage of homogenous material – not component

Example of Homogenous Materials:  
Surface-mount IC chip structure



*Adapted from Paul Goodman, ERA*

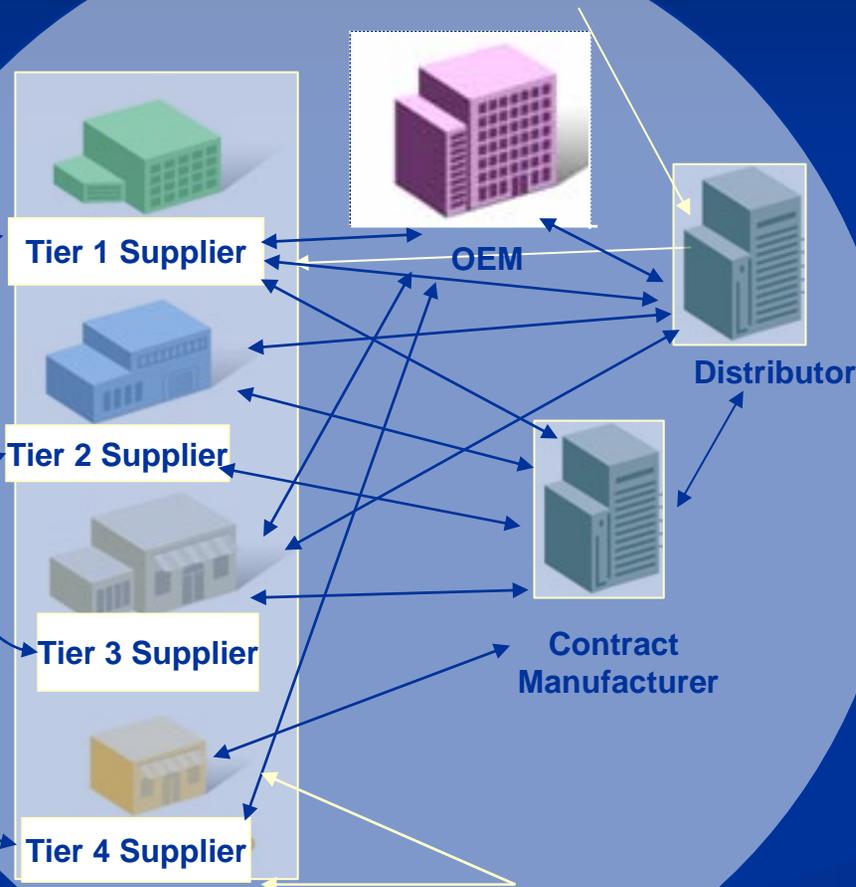
# As A Result: Brand-Owners Face Tremendous Financial Risk

- One non-compliant homogenous material in a single part from a single supplier could result in:
  - Multi-million dollar revenue losses
  - Loss of customers, revenue and market share
- As a result:
  - OEMs relentlessly driving RoHS-compliance down the entire supply chain
  - CMs and suppliers face substantial business risk
  - "Out-of-compliance" could mean "out-of-business"
- Many, many problems for SMEs

# SME Obstacles to Compliance

- Operating on very thin margins
- Lack of time, \$ and human resources
- Ability to accurately provide substance information
- Parts numbering issues
- Lack of awareness about RoHS, e.g.:
- "A survey conducted by the Taiwan Electrical and Electronic Manufacturers Association early this year showed that ... only 3 percent have come up with products that are in accordance with the RoHS standard." --Taiwan Times, June 20, 2005

# One of Biggest Obstacles: Material Declaration Management



- Is Y/N enough?
- Do we collect at ppm level?
- On how many substances?
- Using what format?
- Aggregating into what database?

# Until Recently: A Customized Nightmare ("100 Customers/100 Forms")

- Virtually no two companies with same # of substances
- Every form has a different format
- Suppliers spending up to 40 hours to fill out one large-customer form
- Management via folders containing hundreds of Excel sheets/many of them with inaccurate data

# What's Needed? Material Declaration Standards

- Speed up compliance
- Cut costs
- Reduce "supply chain stress"
- Would ease supply chain burden tremendously, as before
  - eCo
  - PDX
  - RosettaNet

# Streams converging

*Supply Chain  
Management*

CommerceNet eCo  
RosettaNet  
PDX

IPC 1751 /  
1752



*Materials Declaration  
Management*

Joint  
Industry  
Guide



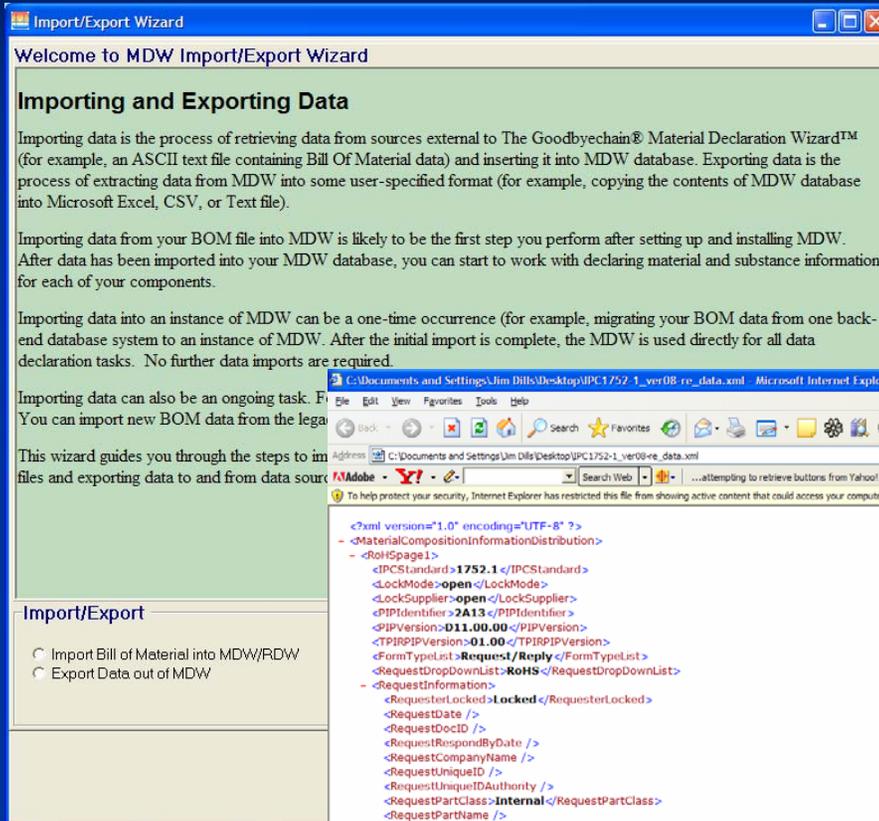
# IPC 1752 Levels of Declaration

- **Class 1 Declaration:** RoHS reporting at a homogeneous level in yes/no format
- **Class 2 Declaration:** RoHS reporting at a homogeneous level in yes/no format plus manufacturing information
- **Class 3 Declaration:** RoHS reporting at a homogeneous level in yes/no format, JIG level A & B at the part level and other customer-specific substances at the part level
- **Class 4 Declaration:** Same as Class 3 with the addition of manufacturing information
- **Class 5 Declaration:** RoHS reporting at a homogeneous level in yes/no format and JIG level A & B at the homogeneous material level and other customer-specific substances at the homogeneous level
- **Class 6 Declaration:** Same as Class 5 with the addition of manufacturing information

# 1752 Standard is at the Heart of a RoHS-Compliance Business Process

- Determining declaration strategy and data collection requirements
- Assigning roles and responsibilities
- Developing a project plan
- Building a Supplier Communications Package
- Conducting a pilot program
- “Going Live” with data collection
- Strategically using 3<sup>rd</sup>-party testing
- Low cost, easy to use data management tools

# SME Tools: Importing 1752 XML files



**Import/Export Wizard**

Welcome to MDW Import/Export Wizard

### Importing and Exporting Data

Importing data is the process of retrieving data from sources external to The Goodbyechain® Material Declaration Wizard™ (for example, an ASCII text file containing Bill Of Material data) and inserting it into MDW database. Exporting data is the process of extracting data from MDW into some user-specified format (for example, copying the contents of MDW database into Microsoft Excel, CSV, or Text file).

Importing data from your BOM file into MDW is likely to be the first step you perform after setting up and installing MDW. After data has been imported into your MDW database, you can start to work with declaring material and substance information for each of your components.

Importing data into an instance of MDW can be a one-time occurrence (for example, migrating your BOM data from one back-end database system to an instance of MDW. After the initial import is complete, the MDW is used directly for all data declaration tasks. No further data imports are required.

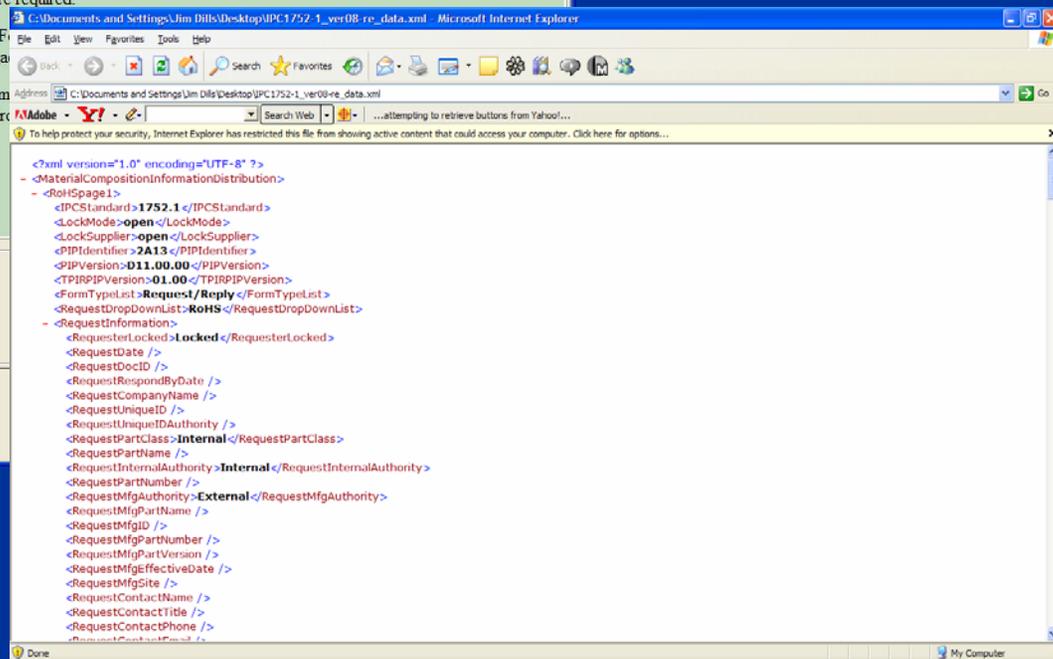
Importing data can also be an ongoing task. You can import new BOM data from the legal files and exporting data to and from data sources.

This wizard guides you through the steps to import files and exporting data to and from data sources.

**Import/Export**

- Import Bill of Material into MDW/RDW
- Export Data out of MDW

- Low Cost Desktop Software Tools
- Import/Export IPC 1752 XML Files



Microsoft Internet Explorer

Address: C:\Documents and Settings\Jim Dills\Desktop\IPC1752-1\_ver08-re\_data.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
- <MaterialCompositionInformationDistribution>
  - <RoHSpage1>
    <IPCStandard>1752.1</IPCStandard>
    <LockMode>open</LockMode>
    <LockSupplier>open</LockSupplier>
    <PIPIDentifier>2A13</PIPIDentifier>
    <PIPVersion>D11.00.00</PIPVersion>
    <TIPIPVersion>01.00</TIPIPVersion>
    <FormTypeList>Request/Reply</FormTypeList>
    <RequestDropDownList>RoHS</RequestDropDownList>
  - <RequestInformation>
    <RequesterLocked>Locked</RequesterLocked>
    <RequestDate />
    <RequestDocID />
    <RequestRespondByDate />
    <RequestCompanyName />
    <RequestUniqueID />
    <RequestUniqueIDAuthority />
    <RequestPartClass>Internal</RequestPartClass>
    <RequestPartName />
    <RequestInternalAuthority>Internal</RequestInternalAuthority>
    <RequestPartNumber />
    <RequestMfgAuthority>External</RequestMfgAuthority>
    <RequestMfgPartName />
    <RequestMfgID />
    <RequestMfgPartNumber />
    <RequestMfgPartVersion />
    <RequestMfgEffectiveDate />
    <RequestMfgSite />
    <RequestContactName />
    <RequestContactTitle />
    <RequestContactPhone />
    <RequestContactEmail />
```

# SME Tools: Generating 1752 Class 1-4 Material Declarations

The screenshot displays two windows from the SME Tools software. The 'Component Library' window shows a table of components with columns for compliance status (A, B, C, R, S, E), Part Name, Customer Part #, Supplier Part #, Customer, Supplier, Certified status, and BOMID. The 'Component Express Wizard' window is open for the component 'RES 49R9 SM 1/10WF0603CS THKF100' and contains several compliance questions with 'Yes/No' radio buttons and 'Advisor' buttons. A red circle highlights the 'Express Wizard' icon in the 'MDF Available Actions' panel.

A	B	C	R	S	E	Part. Name	Customer Part #.	Supplier Part #	Customer	Supplier	Certified	BOMID
N	N	N	N	N	N	INTEGRATED CI...	870994	ADP3418	OEM	ANALOG DEVICES	NO	VR1
Y	Y	Y	Y	Y	Y	RES 49R9 SM 1...	7778067	WCR063-49...	EMS	IRC	NO	BR18
N	N	N	N	N	N	24L TSSDP P...	1887596	SL258930	OEM	SLI	YES	48887654
N	N	N	N	N	N	CAPACITOR-SA...	9446572	C1608COG1...	OEM	TDK	NO	Capaci...
N	N	N	N	N	N	CONNECTOR 25...	3084925Y01	207463-1	EMS	TYCO	NO	TY0775
N	N	N	N	N	N	PRINTED CIRCU...	33398763	PCBB 1077-32	OEM	TYCO	NO	PCB Pa...
N	N	N	N	N	N	RESISTOR-SAM...	9664058	RK73H1JLT...	OEM	VISHAY/DALE	NO	Resisto...

**Component Express Wizard**

Component: RES 49R9 SM 1/10WF0603CS THKF100

Is this component exempt from RoHS? **RoHS Exemptions**  Yes  No **Advisor**

Does this specific component contain ANY of the six (6) substances banned by RoHS that exceed the PPM thresholds?  Yes  No **Advisor**

Does this component contain ANY substances that exceed the thresholds listed on the Joint Industry Guide's "A" List or Intentionally Added?  Yes  No **Advisor**

Does this component contain ANY substances that exceed the thresholds listed on the Joint Industry Guide's "B" List?  Yes  No **Advisor**

Does this component contain ANY substances that exceed the thresholds for "C" List?  Yes  No **Advisor**

Does this component comply with the lead-free solder assembly standards?  Yes  No **Advisor**

**MDF Available Actions:** Certify, Delete, Export, Import, Help, Calc PPM, Express Wizard

Legend:  non-compliant  compliant  C substance not

- SME Product Library
- Easy to Use Material Declaration Wizard

# SME Tools: Creating an Audit Trail - 1752 Declarations & Certificates

Print Preview

IPC 1752 Material Composition Declaration Report

Information Requester			
Request Date	Request Document ID	Internal Part Name	Internal Part Number
		IC11	870994
Respond By Date	Company Name	Manufacturer Part Name	Manufacturer Part Number
	OEM	INTEGRATED CIRCUIT11111	870994
Company Unique ID	Unique ID Authority	Manufacturer Part Version	Manufacturer Part Date
00-136-8085		5	12/30/1
Requester Signature		Manufacturing Site	My ID #
		Santa Clara, CA	
Information Responder (Supplier Information)			
Response Date	Response Document ID	Contact Name	
6/18/2005		Ted Hughes	
Company Name		Contact Title	Contact Number
ANALOG DEVICES			719.527
Company Unique ID	Unique ID Authority	Contact Email	
00-960-6548		thughes@compsupply.com	
Part Name	Part Number	Part Weight	Unit per
IbiSupplierPartName	ADP3418	0.069999898 grams	each
Effective Date	Version	Manufacturing Site	Part Co
12/30/1899	5	Santa Clara, CA	
Alternative Recommended Part	Alternative Part Availability Date		
ADP3418R	6/16/2005		

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Print Preview

RoHS Material Composition Declaration

By indicating RoHS compliance in this declaration report, you confirm that each of the supplier/manufacturer part numbers listed in this form are in compliance with the substance restrictions of RoHS (European Union's Directive 2002/95/EC, Restrictions of Hazardous Substances and the EU TAC (Technical Adaptation Committee) homogeneous material definition) or are exempt for the reason(s) indicated. This determination was made using appropriate systems and processes to ensure accuracy of the data provided by your suppliers, and you have methods of verifying and/or auditing the information provided and maintaining appropriate records to allow traceability of the products covered in this declaration. In addition, should any person or entity acting in reliance on this declaration become the subject of an action brought by a government agency under the RoHS Directive identified above, and such action was due to any inaccuracies or misrepresentations made in this declaration, you hereby authorize the person or entity to release your name to the authorities in their defense if so required.

RoHS Directive Version 2002/95/EC	Quantity limit of 0.1% by mass (1000 PPM) of homogeneous material for Lead (Pb), Mercury, Hexavalent Chromium, Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE) and quantity limit of 0.01% by mass (100 PPM) of
RoHS Declaration	<b>Compliant with Exemptions</b>
Compliant -	Does not contain RoHS restricted substances
Compliant with Exemptions -	Does not contain RoHS restricted substances per the definition except for the specific application exemptions listed below
Not Compliant -	Contains RoHS restricted substances above the limits and is not under exemption
Obsolete Part -	The requested part is obsolete, no information is available
Unknown Part -	The requested part is unknown
Signature Of Supplier	<input type="text"/>
RoHS Exemptions	
6c Lead as an alloying element in copper containing up to 4% lead by weight	

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# Case Study #1

- \$15M wire harness & cable assembly supplier in mid-west
- Motorola supplier - required to provide full disclosure for 82 assemblies or lose \$3M in business
- Large suppliers ignored requests for material and substance information
- Some suppliers wanted to charge for time required to gather material and substance information
- Implemented Material Declaration Management program utilizing GCG services and software tools
- Program began in June 2005; Currently 40% complete

# Case Study #2

- \$13M motion control products company
- 90 products; 90% mechanical parts
- Designs all parts and specifies all raw material for mechanical parts
- Implemented Material Declaration Management program utilizing GCG services and software tools
- Plan to use 1752-1 and generate Class 3 declarations
- Will use raw material manufacturer material & substance certificates as compliance audit trail
- Program began in August 2005; Currently 35% complete

# Summary

- SMEs are at great risk
- Of all their challenges, data management is one of the greatest
- Standard forms, tools and business processes offer the very best hope
- NIST's support for standards is critically important

# Thank you

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